

WHAT IS CLAIMED IS

1. A stop position estimating apparatus of an internal combustion engine comprising:

5 a motor generator having a function of at least one of a motor and a generator interlocked with a crankshaft of the internal combustion engine;

a first detecting unit for detecting a rotation position of the motor generator;

10 a second detecting unit for detecting a crank angle of the crankshaft; and

an estimating unit for estimating a stop position of the internal combustion engine based on the rotation position of the motor generator and the crank angle.

15 2. The stop position estimating apparatus of an internal combustion engine according to claim 1, further comprising:

a rotation direction detecting unit for detecting a rotation direction of the internal combustion engine based on the rotation position detected by the first detecting unit ,

20 wherein the estimating unit estimates the stop position of the internal combustion engine based on the rotation direction and the crank angle detected by the second detecting unit.

25 3. The stop position estimating apparatus of an internal combustion engine according to claim 1, further comprising:

a crank angle estimating unit for estimating a crank angle of the internal combustion engine based on the rotation position detected by the first detecting unit; and

30 a correcting unit for correcting the estimated crank angle based on the crank angle detected by the second detecting unit.

4. The stop position estimating apparatus of an internal combustion engine according to claim 3, further comprising:
a unit for detecting a number of revolution of the internal combustion engine,

5 wherein the correcting unit corrects the estimated crank angle only when the detected number of revolution is within a predetermined range.

5. The stop position estimating apparatus of an internal combustion engine according to claim 3,
10 wherein the correcting unit corrects the estimated crank angle so that the crank angle estimated by the crank angle estimating unit coincides with the crank angle detected by the second detecting unit.

15 6. The stop position estimating apparatus of an internal combustion engine according claim 3,
wherein the correcting unit does not perform correction of the estimated crank angle when an error between the crank
20 angle estimated by the crank angle estimating unit and the crank angle detected by the second detecting unit is larger than a predetermined standard error.

7. The stop position estimating apparatus of an internal combustion engine according to claim 3, further comprising:
25 a unit for outputting estimation accuracy information indicating that the estimation accuracy is ensured when an error between the crank angle estimated by the crank angle estimating unit and the crank angle detected by the second detecting unit
30 is within a predetermined standard error range.

8. The stop position estimating apparatus of an internal combustion engine according to claim 6, wherein the correcting unit comprises:

an error detecting unit for detecting the error between
5 the crank angle estimated by the crank angle estimating unit and the crank angle detected by the second detecting unit; and

a unit for determining the standard error based on a predetermined number of detected errors.